

**Amendment to the Specification:**

On page 1, after the title and before the first line of the specification, please insert the subheading:

**Background of the Invention**

On page 1, before the fourth paragraph, please insert the subheading:

**Summary of the Invention**

On page 2, please delete the second paragraph in its entirety and insert the following paragraph and subheading as follows:

~~Further advantages and details of the present invention shall be explained with reference to the examples of embodiments depicted in the drawing figures 1 to 5. Depicted is/are in~~

Still further advantages of the present invention will be appreciated to those of ordinary skill in the art upon reading and understanding the following detailed description.

**Brief Description of the Drawings**

The invention may take form in various components and arrangements of components, and in various steps and arrangements of steps. The drawings are only for purposes of illustrating the preferred embodiments and are not to be construed as limiting the invention.

On page 2, please amend the third and fourth subparagraphs as follows:

[[ - ]] ~~drawing figures~~ Figures 1 to 4 depict cross sections of ball bearings with differently designed emergency bearing surfaces and

[[ -]] ~~drawing figure~~ Figure 5 depicts a molecular drag vacuum pump equipped with emergency bearing surfaces in accordance with ~~the present invention~~ any one of Figures 1-4.

On page 2, before the last paragraph, please insert the subheading:

**Detailed Description of the Preferred Embodiments**

On page 3, please amend the first paragraph as follows:

In order to form the emergency bearing surfaces 14, 15 in accordance with the present invention one or both bearing races 2, 3 are equipped with ring-shaped projections which – when arranged on the side opposing the bearing cover 8 simultaneously provide the function of a second bearing cover 8. In the solution in accordance with ~~drawing figure~~ Figure 1 the outer bearing race 3 is provided on its side opposing the bearing cover 8 with a projection 16 extending in the direction of the inner race 2. The inner surface of said outer bearing race 3 forms with reference to the axis 6 the cylindrical emergency bearing surface 14. The section of the outer surface of the inner race 2 opposing said surface 14 is the second emergency bearing surface 15.

On page 3, please amend the second paragraph as follows:

In the solution in accordance with ~~drawing figure~~ Figure 2, the inner race 2 is equipped with a projection 17 extending <sup>[[<sup>1)</sup>]]</sup> radially towards the outside. The outer surface of the inner race 2 and a part of the inner surface of outer race 3 also form cylindrical emergency bearing surfaces 14, 15.

On page 3, please amend the third paragraph as follows:

In the solutions in accordance with ~~drawing figures~~ Figures 3 and 4 the inner bearing race 2 and the outer bearing race 3 are equipped with projections 18, 19

respectively 21, 22. The emergency bearing surfaces 14, 15 opposing each other exhibit a stepped cross-section (~~drawing figure~~ Figure 3) respectively form with the axis 6 the angle  $\alpha$ . In this manner emergency bearing surfaces are created which not only become effective in the instance of a failure of the radial guidance of the rotating system by the bearings but also in the instance of an axial failure.

On page 4, please amend the second paragraph as follows:

~~Drawing figure~~ Figure 5 depicts as an example for a molecular drag vacuum pump a turbomolecular pump 25 the stator of which is designated as 26 and the rotor of which is designated as 27. Said pump is designed by way of a compound pump and is equipped with a turbomolecular pumping stage 28 equipped with blades and a molecular pumping stage 29 equipped with a thread. The rotor 27 is partly of a bell-shaped design. Within, respectively slightly below the space 31 encompassed by the bell, the rotor is supported rotatably through the shaft 34 in the bearings 35 and 36. Moreover, there is accommodated within the space 31 the electric drive motor, its stator pack which is designated as 37 and the rotor pack which is designated as 38. The bearings 35, 36 and the rotor stator 37 are supported by a sleeve-like carrier 39.

On page 4, please delete the "Translator's Note" in its entirety:

<sup>4)</sup> ~~Translator's note: The German text states "...erstreckende erstreckenden..." here whereas "...erstreckenden..." would make for a complete sentence. Therefore the latter has been assumed for the translation.~~

On page 5, please amend the first paragraph as follows:

For the purpose of supplying the bearings 35 and 36 with a lubricant, a vessel 41 filled with oil 40 is affixed underneath the turbomolecular pump 25<sup>[[2)]</sup>. The drive shaft 34, the lower end of which is immersed in the oil exhibits an inner coaxial bore 42 which owing to the conically expanding bottom section 43 effects pumping of the lubricating oil towards the top. Through cross bores 44 the oil first

arrives at the upper bearing 35 and there flows, due to the effect of gravity, through the bottom bearing 36 back into the oil vessel.

On page 5, please amend the second paragraph as follows:

Through the forevacuum port 45 and the line 46, the turbomolecular pump 25<sup>[[3]]</sup> is connected to the forevacuum pumping facility 47. Since there exists between the motor/bearing chamber 31 and the forevacuum port 45 a connection, there also prevails in space 31 the necessary forevacuum pressure needed to operate the turbomolecular pump. In order to prevent corrosive gases being pumped by the turbomolecular pump from entering into the bearing chamber 31, a purge gas facility is provided which initially comprises the gas admission pipe 48 opening out into the bearing chamber. For the purpose of admitting the purge gas in a controlled manner said gas inlet pipe 48 exhibits a valve 50. The purge gas (N<sub>2</sub> for example) entering into the motor/bearing chamber 31 flows through the motor as well as the upper bearing 35 and passes outside the bearing carrier 39 to the discharge port 45. Thus the entry of corrosive gases, which are being pumped by the turbomolecular pump 25, into the motor/bearing chamber 31 is prevented.

On page 5, please delete both of the "Translator's Notes" in their entirety:

<sup>2)</sup> ~~Translator's note: The German text states "31" here whereas "25" would be more in line with the drawing figures and the remaining text. Therefore "25" has been assumed for the translation.~~

<sup>3)</sup> ~~Translator's note: The German text states "31" here whereas "25" would be more in line with the drawing figures and the remaining text. Therefore "25" has been assumed for the translation.~~

On page 6, please amend the second paragraph as follows:

Within the scope of the present invention one bearing or both bearings 35, 36 has/have been designed (not depicted in detail) as depicted in one of the drawing figures Figures 1 to 4. An advantage of this measure is that in the instance of a failing bearing, the active pumping surfaces (blades of the rotor/stator thread) are not

damaged. The gap 24 between the emergency bearing surfaces 14, 15 defines in the instance of a failed bearing the maximum deflection of the rotor 27 from its nominal position. Correspondingly narrow also the distances between the active pumping surfaces can be selected. The smaller these distances, the better the properties of the pump. Moreover, the fact, that between the bearing races 2, 3 at least for bearing 35 there exists a narrow relatively long gap 24, offers the advantage of a considerable reduction in the rate of the purge gas flowing through the bearing. Finally, the projections at the bearing races 2, 3 permit larger contact surfaces which effect an improvement in the dissipation of heat from the bearing.

On page 7, after the last paragraph, please insert the following paragraph:

The invention has been described with reference to the preferred embodiments. Modifications and alterations may occur to others upon reading and understanding the preceding detailed description. It is intended that the invention be constructed as including all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.

On page 8, please delete the duplication of the title and insert the following paragraph in its place as follows:

**~~Ball Bearing and a Vacuum Pump that is Equipped with a Bearing of this Type~~**

Having thus described the preferred embodiments, the invention is now claimed to be:

On page 9, please delete the "Translator's Note" in its entirety:

<sup>4)</sup> ~~Translator's note: The German text states "14, 14" here whereas "14, 15" would be more in line with the drawing figures and the remaining text. Therefore "14, 15" has been assumed for the translation.~~